IN THE CLAIMS

Please amend claims 1, 2, 17 and 19 as follows:

1. (CURRENTLY AMENDED) An improved distributed Bragg reflector comprising:

a sampled grating including a plurality of sampled grating portions comprising a first structural phase separated from each other by portions with no grating; and

a first grating burst portion at the beginning of a first sampled grating portion of the sampled grating and comprising a second structural phase, said second structural phase being different from the first structural phase.

C1

2. (CURRENTLY AMENDED) The reflector of claim 1, wherein the second structural phase is substantially opposite that of said first structural phase of said sampled grating.

3. (PREVIOUSLY AMENDED) The reflector of claim 1, wherein the first sampled grating portion and the first grating burst portion are spaced apart and configured such that maximum values for a coupling constant (κ) are substantially uniform across a selected tuning range.

4 - 10 (CANCELLED)

11. (PREVIOUSLY ADDED) The reflector of claim 1, wherein the portions with no grating occupy more than 70% of the reflector.

12. (PREVIOUSLY ADDED) The reflector of claim 1, wherein the first grating burst portion is spaced apart from the first sampled grating portion by a spacing with no grating.

13 - 16 (CANCELLED)

17. (CURRENTLY AMENDED) A distributed Bragg reflector comprising:

a sampled grating including a plurality of sampled grating portions separated from each other by portions with no grating;

wherein the sampled grating portions each have a first structural phase and a second structural phase.

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18. (PREVIOUSLY ADDED) The reflector of claim 17, wherein the portions with no grating occupy more than 70% of the reflector.

19. (CURRENTLY ADDED) The reflector of claim 17, wherein the sampled grating portions reverse structural phase at a beginning and an end of each sampled grating portion.

20 - 29 (CANCELLED)

I. INTRODUCTION

In response to the Advisory Action dated October 16, 2003, claims 1, 2, 17 and 19 have been amended. Claims 1-3, 11, 12 and 17-19 remain in the application. Entry of these amendments, and re-consideration of the application, as amended, is requested.

II. CLAIM AMENDMENTS

Applicants' attorney has made amendments to the claims 1, 2, 17 and 19 as indicated above. These amendments were made to clarify the claim language and were not required to distinguish the claims over the prior art. Specifically, these claims have been amended to clarify that the "phase" refers to a structural quality of the gratings.

III. EXAMINER INTERVIEW

On October 28, 2003 an interview was held between Examiner Landau and Applicants' attorney, Bradley K. Lortz, to discuss the application and the remaining §102 rejection in view of U.S. Patent 5,715,271 by Huang (Huang '271).

Although agreement was not reached on the allowability of the claims in view of Huang '271, the Examiner acknowledged that each section of phase-shifted grating L_z of Huang '271 (FIG. 1) are repeating patterns of grating portions (L_g) and portions with no grating (L_s) as shown at col. 3, line 67 to col. 4, line 22. However, Examiner Landau indicated that proper reconsidetation of the claims required a written presentation of the arguments.

IV. PRIOR ART REJECTIONS

On page (2) of the Advisory Action, claims 1, 2, 3, 12, and 17 were rejected under 35 U.S.C. §102(b) as being anticipated by Huang '271. However, the Advisory Action also indicates that claims 11 and 18 are allowable (presumably if rewritten to include all the limitations of the base claim and any intervening claims).

In response, Applicants thank the Examiner for the indication of allowed claims and his consideration in discussing the application in the interview, but respectfully traverse these rejections.

Independent claims 1 and 17 are generally directed to an invention that provides a distributed Bragg reflector such as can be used in a tunable laser. In one embodiment, as claimed in

claim 1, a distributed Bragg reflector comprises a sampled grating including a plurality of sampled grating portions comprising a first structural phase separated from each other by portions with no grating and a first grating burst portion at the beginning of a first sampled grating portion of the sampled grating and comprising a second structural phase, said second structural phase being different from the first structural phase. In another embodiment, as claimed in claim 17, a distributed Bragg reflector comprises a sampled grating including a plurality of sampled grating portions separated from each other by portions with no grating. The sampled grating portions each have a first structural phase and a second structural phase. Neither of the cited references teach or suggest these various elements of Applicants' independent claims.

Respecting claim 1, the Advisory Action maintains that the leftmost grating section of FIG. 1 of Huang '271 is considered to be the first grating burst portion. The Advisory Action notes that the leftmost grating is separated from the remaining grating sections by the phase shift section of length L_s and further asserts that "since the section of length L_s is in fact a phase shift section, the phase of the grating burst portion must be different from the remaining grating sections of the left sampled grating". Applicants respectfully disagree.

As acknowledged by the Examiner in the October 28 interview, each section of phase-shifted grating L_x of Huang '271 are repeating patterns of grating portions (L_g) and portions with no grating (L_a). The distinct leftmost grating portion, separated from the remaining grating portions of the left section L_x, is merely identified in order to define the repeating pattern. Huang teaches that the phase shift section L_s is periodically inserted. See col. 8, lines 1-5. The total device length of Huang '271 is $L = 2L_x + L_p$, where $L_x = n_x(L_g + L_a)$ and n_x represents the number of grating in each grating section. See col. 3, line 67 to col. 4, line 22. n_x is an integer number chosen by the designer. See col. 3, lines 46-48. Thus, the leftmost grating portion of Huang '271 is merely the first grating portion of the left section of phase-shifted grating L_x, i.e. the left sampled grating.

Furthermore, Applicants submit that Huang '271 uses the term "phase" to refer to the relationship of a defined grating structure to the transmitted light. For example, Huang '271 teaches the following.

> "Typically a waveguide grating resonator filter comprises a waveguide with two corrugated reflector sections, i.e. grating structures, which are effectively $\pi/2$ ($\lambda/4$) shifted relative to each other. The phase shift could in theory be provided by a slip

> in the grating period, but for gratings of practical dimensions, the phase shift is achieved by a section in which the corrugations are removed." Col. 1, lines 20-27.

In contrast, the claims of the present invention employ "phase" to refer to a quality of the physical structure of the grating, a "structural phase".

For example, the top left image of FIG. 6 of the present application shows a grating portion of length L_B having a single structural phase. The top right image of FIG. 6 illustrates the related sampling function indicating the single structural phase of the grating portion. The bottom left image of FIG. 6 shows an exemplary grating portion (that can be repeated in a sampled grating) having two different structural phases such as presently claimed in claim 17, a first structural phase over the length L_{B+} and a second structural phase over the lengths L_{B-}. The bottom right image of FIG. 6 illustrates the related sampling function indicating the two structural phases of the grating portion. FIG. 4 of the present application illustrates another exemplary embodiment including a first burst portion having a different structural phase (indicated by L_{B-}) than that of the sampled grating (indicated by L_{B+}) such as presently claimed in claim 1. Applicants have amended the claims to clarify that the different phases of the gratings are structural.

In view of the foregoing, Applicants submit that Huang '271 does not teach or suggest a grating structure of any type employing different structural phases. Thus, nowhere does Huang '271 teach or suggest individual grating portions of a sampled grating having more than one structural phase as in present claim 17. Applicants further submit that the leftmost grating portion of the left section of phase shifted grating L_z in FIG. 1 of Huang '271 is only the first grating portion of a left sampled grating. Accordingly, this leftmost grating portion has the same structural phase as the remaining grating portions of the section phase shifted grating L_z. Thus, nowhere does Huang '271 teach or suggest a sampled grating employing different structural phases, such as in a distinct grating burst as in present claim 1.

Thus, Applicants submit that the present §102 rejections in view of Huang '271 are overcome because each and every element of the claimed invention is not taught in the cited reference. Respecting claim 1, Huang '271 does not teach or suggest a first grating burst portion at the beginning of a first sampled grating portion of a sampled grating and comprising a second structural phase, different from the first structural phase of the sampled grating portions. Respecting claim 17, Huang does not teach or suggest sampled grating portions wherein each sampled grating portion has a first